Concordia
UNIVERSITY

Volume 2, Number 4
March 1995

Engineering & Computer Science BITS

CITEC Pilot Project Moves Forward

In November of 1994, representatives from the Faculty and CITEC (Centre d'Initiative Technologique de Montréal) formed a working group in order to craft an action plan which would facilitate the application of Masters and Doctoral thesis work to industry needs on a formal and continuing basis. Under the chairship of Morel Bachynski of MPB Technologies, the group has met on numerous occasions to exchange information and address issues of concern to the primary players in the proposed pilot project - industry, research centres, supervising professors and graduate students. An extensive dossier containing information about the participating companies (Canadian Marconi, MPB Technologies, Pratt & Whitney and Spar Space Systems), requirements for graduate degrees and current research within the Faculty has been compiled.

At its January meeting, the working group addressed several concerns raised by graduate students. Members agreed that the current time requirement for thesis research would be the same for students conducting industry-based research as for students conducting research exclusively within the University. In order to ensure that industry-related research meets degree requirements, each project will be agreed upon in advance by both the University and the company in question. In some cases industrial facilities and company liaison which will be provided to the student.

The working group is now developing a draft brochure concerning the programme which will be distributed to students entering graduate studies in June 1995. Students who are interested in the pilot project will be required to make arrangements with their research directors to work in one of several specified technical areas. These technical clusters are currently being identified by researchers at the participating companies in conjunction with faculty from Concordia. At Pratt & Whitney they include manufacturing, aerodynamics and structures. Once in place, the project should provide a ready means of effective liaison and collaboration with local industry.

M.Eng. (Aerospace) Information Session

For the past four years, Concordia, in conjunction with other Québec universities and Montréal-area aerospace industry, has offered a career-oriented M.Eng. (Aerospace) programme. Admission to the programme is limited and includes a paid industrial stage at selected aerospace companies as part of the course work. Each year an information session about the programme is offered at one of the participating universities. This year the session will be held at Concordia.

Thursday, March 16, 1995
14h00
Cinéma J.A. DeSève (LB 125)
1400 de Maisonneuve Blvd. West

Details of the programme will be presented. Representatives from industry will be present to provide information on the activities of their companies. Students contemplating aerospace engineering as a career will have the opportunity to discuss the programme and career opportunities with representatives from participating industries. All engineering students graduating this year are particularly welcome. The session will also be of interest to students in the third year of study who are currently choosing their electives for final year.

In this issue...

Industry Breakfast.....page 2
Retention Study............page 3
Search Committee...page 3
Atelier Autotchone..page 3
QEC....................page 4
CENPARMI News...........page 4
Winners...........page 5
Faces...............page 6
Honour Roll......page 7
IAQ....................page 8
Job....................page 8

Breakfast for Partners in Industry

In 1993-94, the Faculty of Engineering and Computer Science received more than $7.5 million for research. While much of that money was awarded through government agencies such as FCAR and NSERC and was used within the University for pure research, a good part (13.2%) of it was provided by private industry for contract research. Given the current trend of cutbacks in government programmes, industrial contract research is becoming increasingly important to researchers in applied science. Collaborative research with industry poses many challenges for researchers, but it also benefits the economy by increasing the rate of technology transfer from the universities to industry and ultimately to the consumer.

On Friday, February 10, 1995 the Faculty invited its partners in industry to a breakfast meeting in the Faculty Club dining room. The breakfast provided an informal setting in which faculty members and industrial representatives could meet to discuss the Faculty, the role of contract research in its activities, and the concrete steps which it has taken in the past 18 - 24 months in order to both enhance and increase its contacts with industry.

Mr. Leo Goldfarb, member of the Board of Governors and Chair of the Search Committee for the Dean of Engineering and Computer Science, spoke to the audience about the great potential for growth and development in technological collaborations as well as the benefits of sharing resources and pooling expertise. Dr. Charles Bertrand, Interim Rector and Vice-Chancellor, underlined Concordia's history as an innovator in post-secondary education. And Dean Donat Taddeo provided participants with a comprehensive look at the Faculty - its student body, its research centres, its professoriate.

The Dean also announced that the Faculty has launched the process towards the creation of an Industrial Advisory Board (IAB). Over the next few months the decanal team, in cooperation with Dr. Morel Bachynski, President - MPB Technologies, Mr. Louis Chenevert, Executive VP - Pratt & Whitney, Mr. Daniel Gilbert, VP Construction - Société Immobilière du Québec, Mr. Goldfarb, and Mr. Rajiv Pancholy, Vice President - Bell Northern Research, will work to define the mission, mandate and responsibilities of the IAB. The full composition of the Advisory Board should be announced in April or May.

Representatives from the following companies and organizations participated in the breakfast for industrial partners.

Airports & Civil Aviation Management
Alcell Technologies Inc.
Asea Brown Boveri Inc.
Bell Québec
Bell Northern Research
Bombardier Inc. - Groupe Canadair
CAMAQ
CPF Dualam Ltd.
Centre de recherche informatique de Montréal
Canadian Pacific Railway
Carto Module Inc.
Caisse de dépot et placement Québec
Centre GP International
École nationale d'aéronautique
Forest Engineering Research Institute
Harris Farinon Canada Inc.
Hydro-Québec
IRSST
IREQ
Innovatech
Minstère des transport du Québec
Mitel Semiconducteur
National Research Council
Shawinigan Lavalin
SPAR Aerospace
STCUM
Transport Canada
UNISYS GSG Canada Inc.
Ville de Montréal
Microtech Inc.
OIQ
Pratt & Whitney
Public Works Canada
Raymond Chabot Martin Paré

Faculty Takes Part in Withdrawal/Retention Study

Educational Choices of Engineering Students is a three year research project studying the withdrawal/retention of students in engineering programmes. It is funded by a strategic grant from the Social Sciences and Humanities Research Council to Professors Marianne Ainley (Simone de Beauvoir Institute, Concordia), Gillian Rejskind (Education, McGill), Peta Tancred (Centre for Research and Teaching on Women, McGill) and Susan Whitesides (Computer Science, McGill).

The projects has two primary goals:

1. to build a model of students' decision processes which will help to identify those students who are most likely to withdraw;
2. to identify ways in which retention rates can be improved.

Students at Concordia, École Polytechnique and McGill who entered engineering in the fall of 1994 will be followed through their programmes to graduation. Sometime during their first year these students will be asked to write the Myers-Briggs Type Indicator (MBTI), a measure of personality. Because career psychologists have established a relationship between personality and career choice, the researchers hope to extend this relationship to show a correlation between personality type and the decision to remain in, or withdraw from, engineering. Students who withdraw before graduation will be interviewed in order to establish the process they go through to make that decision. Early each spring a comparable group of students who do not withdraw will be interviewed to determine how they have handled the situations which lead others to withdraw.

According to Dr. Ainley, she and her colleagues are interested in who chooses engineering and why they choose engineering. Because of the historically low enrollment of women in the engineering profession they are particularly interested in the factors which lead young women to choose and subsequently pursue, or abandon, studies and careers in engineering.

At Concordia the MBTI is being given to students currently registered in ENCS 281. The Educational Choices of Engineering Students research project will run through 1997.

Search Committee Update

The Advisory Search Committee for a Dean of the Faculty of Engineering and Computer Science is pleased to report that interviews of both internal and external candidates for the position of Dean are ongoing. The Committee is optimistic that the Board will be able to appoint a new Dean before the expiration of Dr. Taddeo's term on May 31, 1995.

The Advisory Search Committee extends its thanks to all those who submitted nominations and suggestions, and also to Dr. Taddeo and his staff for their generous assistance in providing material to educate the Committee and the candidiates about Faculty.

Anyone having questions or comments may contact Chairman Leo Goldfarb, Consultant Guy Lemelin or any other member of the Committee. Committee secretary, Amely Jurgenliemk, can be reached at 848-7319.

Atelier pour les enseignants autochtones:

Weaving Technology & Tradition

Les 2 et 3 février derniers, la Faculté accueillait une dizaine d'enseignants et des personnes ressources autochtones et non-autochtones oeuvrant dans le domaine de l'éducation à l'intérieur de leur communauté. Ces professionels, qui représentent six différentes nations à travers le Québec, discutèrent et échangèrent sur la problématique entourant la technologie et les traditions ancestrales ainsi que sur la science intégrée à l'éducation.

Les ateliers, organisés par le Prof. Corinne Jetté (Bureau du doyen), ont réuni des personnalités impliquées directement dans le secteur de l'ingénierie et/ou de l'enseignement des sciences.

Plusiers activités ont eu lieu dans le cadre de cette rencontre. Entre autres, les participants ont pu explorer l'entendue des possibilités qu'offre la technologie, et des informations concernant le programme d'ingénierie, les facilités mises à la disposition des étudiants, le camp d'été Explorations en Génie ainsi que certaines méthodologies pédagogiques leur ont été présenté. Par ailleurs, la visite des laboratoires ont su captivé l'intérêt géneral.

Cet atelier fait partie d'une initiative collaborative entre la Faculté, l'Ordre des ingénieurs du Québec et l'Association canadienne autochtone en science et en ingénierie qui vise à ouvrir les portes aux études en génie pour les jeunes autochtones.

Students Excel at QEC

From February 9 to 12, 1995 a record-breaking ninety-six of the province's brightest engineering students met at Concordia for the eleventh annual Québec Engineering Competition. Forty teams from eight universities competed for more than $14,000 in prizes and the opportunity to represent Québec at the Canadian Engineering Competition (CEC) in Edmonton.

QEC opened on Thursday evening with a wine & cheese reception in the Faculty Lounge where participants were welcomed by Dean Donat Taddeo and Honourary QEC Chair, Marshall Moreyne of Télécité. Competition began on Friday morning and judging continued through to Saturday afternoon.

At midday on Friday participants took a well earned break from judging to hear from two invited speakers, William Pearson, President of the AGRA Engineering Group, and Claudette Mackay-Lassonde, President of Firelight Investment Limited. Mr. Pearson's company employs more than 5000 people and is one the top 25 engineering companies in the world. He spoke to the students about a Canadian economy based on technology and innovation and about the skills companies look for in entry-level engineers - technical know-how, communications skills, and the ability to work in a changing environment. Ms. Mackay-Lassonde addressed the theme of QEC '95, "The Challenge of Tomorrow". She told the audience that in addition to technical competence, tomorrow's engineers will be required to have marketing and financial skills, as well as the ability to compete in an international marketplace by speaking several languages and respecting cultures different to their own. She also emphasized the need for members of the profession to decisively address the issue of women in engineering.

The competition ended on Saturday night with an awards banquet at the Queen Elizabeth Hotel. Concordia students brought home five of the nineteen available prizes. Of particular note was the team of George Metrakos, Brendan Montour and John Theophanous, who placed second in the Corporate Design category. Their project, the conversion of a Ford Escort from standard to electric drive, also won the prestigious Excellence Award sponsored by l'Ordre des ingénieurs du Québec, and will go on to CEC at the University of Alberta. For a complete list of winners please see page 5.

QEC attracted a fair amount of local media attention. Reports about the competition aired on CTV, CBC, TVA and Quatre Saisons. Organisers were also interviewed by members of the print and radio media.

News from CENPARMI

The Centre for Pattern Recognition and Machine Intelligence (CENPARMI) was well represented at the 12th International Conference on Pattern Recognition held in Jerusalem, Israel last month. The delegation was led by Centre Director, Dr. Ching Suen (Computer Science), member, Dr. Adam Krzyzak (Computer Science) and Dr. R. Plamondon, an inter-university member from l'École Polytechnique. Delegates included research associate Dr. Louisa Lam and graduate student Fady Said. They presented 11 technical papers, the largest number of presentations by any single group at the conference, which attracted 520 scientists from all over the world.

As well as attending the Governing Board meeting of the International Association for Pattern Recognition (IAPR), Drs. Suen and Plamondon chaired two technical committee meetings. Dr. Suen also attended the editorial board meetings for several of the leading journals in the fields of pattern recognition and artificial intelligence. In recognition of Drs. Suen and Plamondon's outstanding contributions to the field of pattern recognition and to IAPR, they were elected as two of the Association's first 35 Fellows. IAPR has 6000 members world-wide.

This summer from August 14 to 16, Dr. Suen will act as General Chair for the third International Conference on Document Analysis and Pattern Recognition (ICDAR). This conference is a forum for identifying, encouraging and exchanging ideas on research, development and novel applications of documented related systems and technologies. Some of the topics to be discussed are: document analysis and understanding, character segmentation and recognition, on-line recognition, map drawing and understanding, document image processing, storage and retrieval of document images, hypermedia processing, theoretical and psychological approaches, implementations, and applications and systems. More than 300 participants are expected to take part in ICDAR '95.

For more information please contact the ICDAR '95 Secretariat c/o CENPARMI, GM 606. Phone: (514) 848-7950 Fax: (514) 848-4522 Email: icdar-95-request@cenparmi.concordia.ca

And the winners are...

Entrepreneurial Design

1. François Caron, Nicolas Pouliot
Université de Laval
Support à vélo ergonomique

2. Fréderic Gagnon, Valérie Fortin, Sonio Perron, Jonotan Tremblay
Université du Québec à Trois Rivières
Système antivol de voiture

3. Luc Bérubé, Jean Lavoie, Patrice Morin
Université du Québec à Trois Rivières
Cadenas alarme multi-tâches

Corporate Design

1. Douchka Ceceille, Caroline Massé
École Polytechnique

2. **George Metrakos, Brendan Montour, John Theophanous**
Concordia University
Ford Escort Conversion to Electric Drive

3. **Elizabath Kyriacou**
Concordia University
Computer-based Inventory Control System

Exteporeaneous Debate

1. Dominique Anglade, Yves Gaberiault
École Polytechnique

2. Christine Ahn, Sylvain Grégoire
McGill University

3. Martin Ferland, Stéphanie Nour
McGill University

Editorial Communication

1. Julie Trudel
Université de Sherbrooke
La réutilisation d'instruments médicaux...
à usage unique!

2. Aaron Chase, Rick Simpson
McGill University
Towards a New Era in Telecommunications

3. **Jari Tuominiemi**
Concordia University
Energy Issues for the Building Sciences

Explanantory Communications

1. Angéline Bilodeau
Université de Sherbrooke
L'automobile eléctrique

2. Sylvie Tran, André Voven
McGill University
The Miller Cycle

3. Fiorella Sist
McGill University
Removal of Heavy Metals in Wastewater using Biosorption

L'Ordre des ingénieurs du Québec Excellence Award

presented by the OIQ to:
George Metrakos, Brendan Montour,
John Theophanous
Concordia University
Ford Escort Conversion to Electric Drive

Technology Leadership Award

presented by Alcan to:
Chris Bonilla, Pangiota Farakis
McGill Unversity
Direct Zinc Smelting

Communcations Excellence Award

presented by Bell Mobilité, Les Promenades de la Cathédrale to:
Michael Slater
Concordia University
Antenna Radiation Enhancement

Multi-disciplinary Excellence Award

presented by SNC-Lavalin to:
Julie Trudel
Université de Sherbrooke
La réutilisation d'instruments médicaux...
à usage unique!

Faculty Faces

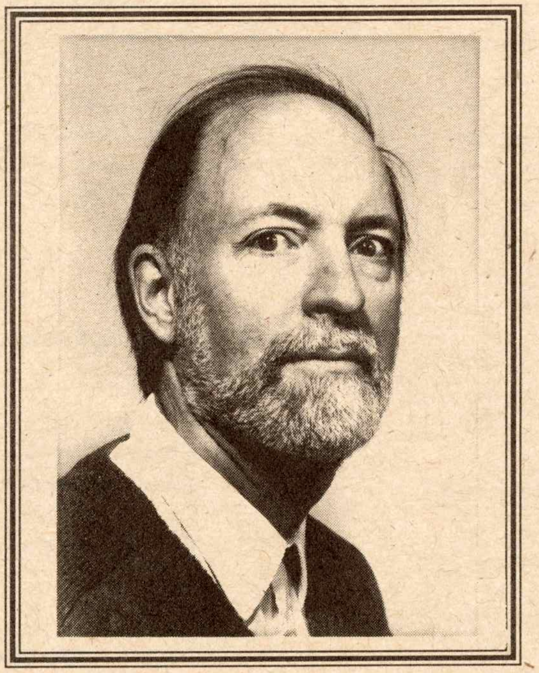
Dr. William Atwood - Department of Computer Science

Faculty Faces is regular feature of *Bits* focussing on personalities within Engineering and Computer Science.

Dr. Bill Atwood, joined the faculty at Sir George Williams University in 1972 He was professor number six in the fledgling Department of Computer Science, and despite the excitement of creating a programme from the ground up he would not go back to those days for anything. "Computers were huge, and we were still using key punches for programming!"

Dr. Atwood received his B.Eng. in Electrical Engineering from McGill University in 1963. Upon graduation he followed the advice of his favourite professor to, "do your Masters in Canada because you'll get more attention and your Ph.D. in the States because you'll get more money." However, a Ford Foundation Scholarship and a half-time teaching assistantship meant that money was never an issue as he pursued his M.A.Sc. at the University of Toronto. "U of T was very different from McGill. At the time the degree designation said it all. A B.Eng. was a practical, very hands-on degree, an approach I thoroughly enjoyed. The applied science degree was much more math oriented. That type of formal, theoretical approach is something I've come to appreciate over the years as a researcher." The University of Illinois, where Dr. Atwood did his Ph.D., was different again. "I feel fortunate to have had the opportunity to see Electrical Engineering in three different ways. It provides you with a certain amount of flexibility and adaptability in your professional life."

After finishing his Ph.D., Dr. Atwood returned to U of T. "I was teaching computer-oriented courses in electrical engineering through a position funded by a two year NRC grant. Towards the end of that period I began looking for other positions." At a conference in Montréal he met someone from Sir George who introduced him to then Dean of Engineering, Clare Callaghan. "After my interview he wanted me to start the next day, but because of commitments in Toronto I didn't start until December 1972." The first class in the Department of Computer Science had been admitted in September of that year.



In 1972, Dr. Atwood would not have been able to project the changes which would occur in the field of computer and subsequently in the Department over the next 23 years. "I take things as they come, but even if I had hazarded a guess back then I would have been wrong. Who could have known that the PC would become what it is today?" He has found it very exciting and satisfying to be at the core of the development of a department. "We've built an excellent programme here. We now admit about 120 full-time, and a large number of part-time, undergraduates each fall. We've developed Masters and Ph.D. programmes. In fact," he says with a smile, "we've been so successful, that they had to change the name of the Faculty."

Dr. Atwood is both Associate Chair of his department and the director of its Co-op Programme. Over the past year, these administrative duties have left him with little time for doing something he truly enjoys - teaching. "I come from a family of teachers, my father and both of my sisters teach. I guess it's in the blood." He does, however, continue to interact with students on a regular basis and spends a good deal of time considering their education. "I think that being within the Faculty of Engineering and Computer Science is to the benefit of our students. It has given the Department a practical orientation which I prefer. Our students spend half their time learning computer science, and the other half learning about the fields in which they will ultimately apply their computer knowledge - whether it's engineering, commerce or chemistry."

Dr. Atwood will take a one year leave starting May 31, 1995. He plans to use the time to continue his research in the specification, validation and performance evaluation of high speed computer communications protocols and to write some papers.

Dean's Honour Roll 1993-94

The following students maintained a GPA of 3.70 or higher during the 1993-94 academic year. They will be honoured at an awards ceremony and reception on March 14, 1995.

Sadi Abou Arbid	
Carlos Alberto Andrade	
Sarah Andrews	
Prakash D. Appanna	B.Eng.
Oliver R. Astley	B.Eng.
Antoine Basbous	
Tien Hy Bui	
Joseph Campanelli	
Nestor Caouras	
Wai-Kuen J. Chan	B.C.S.
Jorge Chang Diaz	
Abbas Charafeddine	
Paul Michel Charest	
Shou-Gang Chen	
Raymond W. Cheung	
Zubin A. Chinoy	
Asifur Choudhury	
Diana Crisante	
William D'Orazio	
Xiao-Feng Dai	
Itai Danan	
Mina Danesh	
Amir Daniel	
Matteo Daniele	
Lucas De Carvalho Ferreira	
Lev Deich	
Karine Desbiens	B.Eng.
Luisa Dodaro	
Dominique Emond	
Debra L. Fruchter	
J.J. François Gagnon	B.Eng.
Carousel Galang	
Milorad M. Gavrilovic	
Franco Gerace	B.Eng.
Reza Ghassemian	
Mehran Ghomi	
Umberto Gisondi	
A. S..J. Glavinovitch	
Susie Guerriero	
Omis Hamrah	
Paul P.H. Haroun	B.C.S.
Joseph Nasri Hazboun	
Lee Hopkins	B.C.S.
Wajih Khalil Hoteit	
Peter Huber	
Vitaly Iourtchenko	
Abbas Ismail	
Isabelle Jetté	B.Eng.
Vineet C. Joshi	
Mark Kabbas	
Parmjit Kanth	
John Karigiannis	
Aline Khoriaty	
Mohan Krishnapillai	
Ho Ching Lai	
Ho Kit Lai	
Eric Langlais	B.Eng.
Hongvu Le	
Thi Anh Phuong Le	
Namjoo Lee	
David Leibov	
Haizhong Lin	
Xue Mei Liu	
Giuseppe Lombardi	
Boris Lorkovic	
Paul Marcovici	
John Douglas McArthur	
Michele Messarra	
Barry Messier	
Guenadi Miliavski	
Darrel Miller	B.Eng.
Nadia Minicucci	B.C.S.
Wing Yeung R. Mok	B.C.S.
Robert Morawski	
Maria Mottillo	B.Eng.
D. Muthiayen	
Giuseppe Naccarello	
Kevin Joseph Neden	
Steven Joseph Neemeh	
Khanh Ngan Nguyen	
Thanh Tu Nguyen	
Thi Xuan Dao Nguyen	
H. Uyentrang Nguyen	B.C.S.
Tan Khai Nguyen	B.Eng.
Roberto Nitti	
Abrahim Noor	
Alexandre Oumanski	
J.F. Patrick Pagé	
Panagiotis Papadatos	
Despina Papoulis	
Michael Patrica	
Jitesh Patel	
Koushika Patel	B.Eng.
Pierre-André Paulin	B.Eng.
Giuseppe Paventi	
M.T. N.Perinpanathan	B.Eng.
Wan Po Fong	
Jimmy Pocetti	
Katta Ya Prom	B.Eng.
Piotr Przybylski	B.C.S.
Rozita Rafieyan	B.Eng.
Francis Ratthe	
Vaso Ristic	
Hany K. Rizkalla	
David S. Salhany	
Eric L. Smith	
Kenneth W. D. Smith	
Alan Hayk Sumbulian	
Sylvia L. Tamme	
Kamran Tavakoli	
Eric Taveau	B.C.S.
Ricardo Trindade	
Jonathon Turner	
Antoine Valentin	
T. Ngoc Lan Vo	
Thu Diem Vo	
Thu Uyen Vo	
Tran-Thang Vu	
Hiep Xuan Vuong	B.C.S.
T.G.C. Wan Chow Wah	
L. H. Wijenathan	
Haipeng Xie	B.Eng.
Fadi N. Younes	
Pui Chi Yu	
Waleed Zaarour	B.Eng.
M. Zabiholahizadeh	

The following first year students are recipients of financial support from the Canada Scholars Programme:

Asif Ahmed
Mahsan Amoui
Emilio Bolainez
Marie-Eve Chenard
Vinh Thieu Dang
Christine Anne Landry
Cam Chuong Le
Victoria Louie
Hak Fung Lui
Remo Marini
Yomn Meki
Sima Memarzadeh
Nancy Orsini
Shikha Sharma
Zhizi Zhao

An Integrated Approach to IAQ

From May 9 to 12, 1995 approximately 300 scientists from all over the world will meet at Montréal's Sheraton Centre for the second International Conference on Indoor Air Quality (IAQ), Ventilation and Energy Conservation in Buildings. The conference will provide a forum for the presentation and discussion of the most recent advancements in the fields of IAQ, ventilation and energy conservation in buildings and will focus on integrated approaches to these three areas. An exhibition of components, engineering systems, instruments and related services will be held at the same time as the conference.

According to conference Chair, Dr. Fariborz Haghighat from the Centre for Building Studies, this gathering is unique in its integrated, multi-disciplinary approach to IAQ. "Our participants - medical doctors, architects, engineers and psychologists - are all looking at the building as a unified system instead of individual components. We are all trying to optimize the system so that it provides good air quality without significantly increasing the energy costs."

For more information about the conference, please contact Dr. Haghighat at 848-3192

Summer Job for Computer Science Students

Imagine-Ere Computer Camp on the Gaspé coast is looking for mature, dependable, experienced computer science students to act as counsellors for the summer of 1995. Applicants must be willing to learn MicroWorld Project Builder by Logo, be competent in DOS and Windows, and have good communications skills. Experience in working with kids is a definite asset. The job pays approximately $250 per week and includes a daily hot lunch and afternoon snack. Cheap room and board are available at the camp or a nearby farm, room and board can be free in return for doing chores.

For more information please contact Sandra Fornasier at 274-0301.

Oops...

Proofreading fell by the wayside in the last issue of *Bits* which contained an unusually high number of typos. This issue should be considerably improved.

Reduce, reuse, recycle, recover -
Please do your part, recycle this copy of *Bits*.

Engineering & Computer Science Bits **is a monthly publication of the Faculty's Communications Office. It is distributed, free of charge, to the Faculty community.**

Composition & Layout:
Dawn Wiseman

Contributors:
Stanley Kubina
Amely Jurgenliemk
Irene Mazis
Eniko Neashish
Gillian Rejskind

Photographs:
Winston Cross

Bits welcomes submissions, commentary and letters from the Faculty community. Please send submissions to:

Dawn Wiseman
LB 1009-1
dawn@hobbit.concordia.ca